PHENIX

Technical Support 2008

PHENIX
WEEKLY PLANNING

1/31/2008

Don Lynch

Run 8 Task Schedule

Technical Support 2008

Item	Start	Finish
RPC support	On Going	On Going
Switch to p+p run	1/28	1/28
Next scheduled Maint. Day?	2/13	2/13
CM Crane design review	2/1	2/28
Lab Holiday (Presidents Day)	2/18	2/18
Scheduled Maint. Day	2/27	2/27
Mu Trigger FEE Prototype II install	2/27	2/27
Complete new beampipe design	2/29	2/29
End PP run	3/12	3/12
500 GeV Run	3/13	3/14
End of Run 8	3/15	5/27
Install new UPS	~3/15	~3/31
End of Run Party	4/4	4/4
Install Gas house UPS's	4/15	6/13
Install HBD	7/15	9/15

Switch to p-p Maintenance: Jan. 28th

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- Switch over to p-p run - Done
- switch Pad chambers onto gas with alcohol - Done
- move ZDC back into symmetric-beam positions - Done
- install access step on BBC rack/CM access ladder hardware - Done
- BBC ADAM Module Reprogramming – Done
- Replacement of DC HV module - ?
- Inserting ZDC Veto Scintillators - ?
- AC Ground fault troubleshooting - ?
- Water drip on CM magnet cooling water (southeast side) – repaired
- Other tasks - ?

Next Scheduled Maintenance Day: 2/13/08

- MuTrigger FEE Prototype II test on 2/27

PC gas supply modifications

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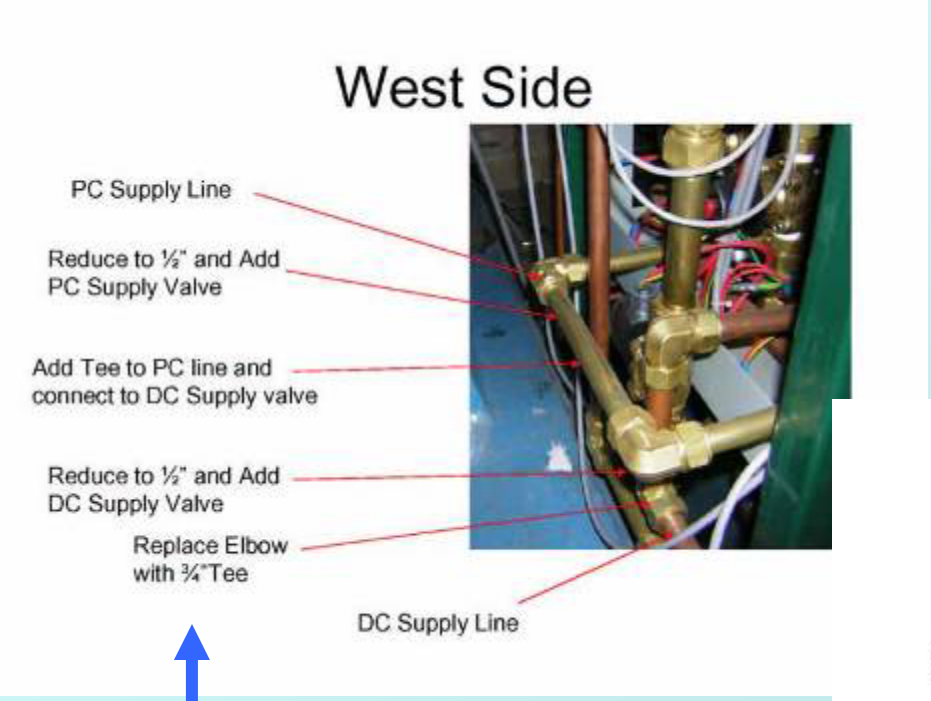
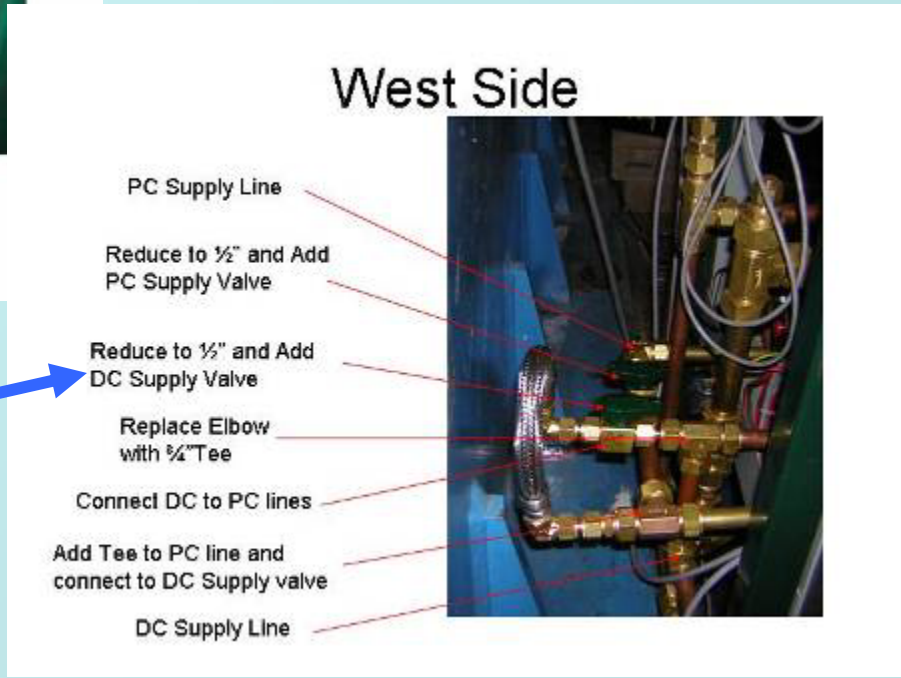


Before

After



PC gas supply modifications

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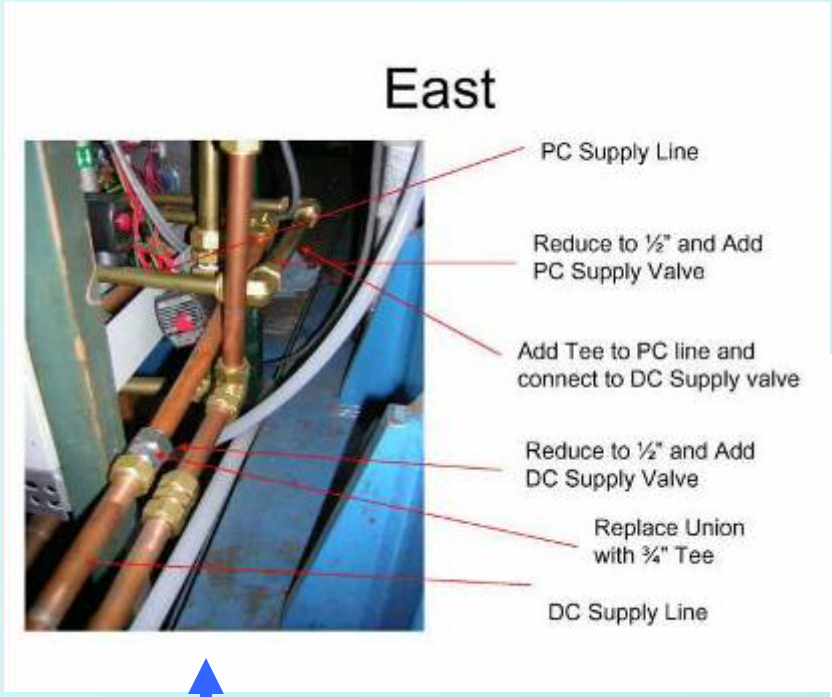
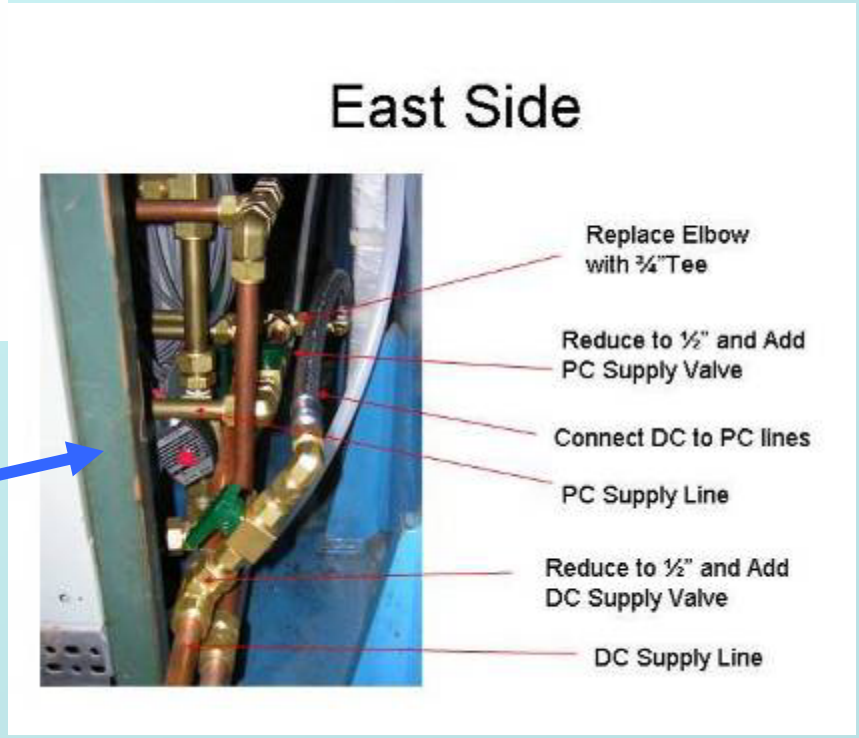


Before

After



CM Ladder/Stair Shutdown Access

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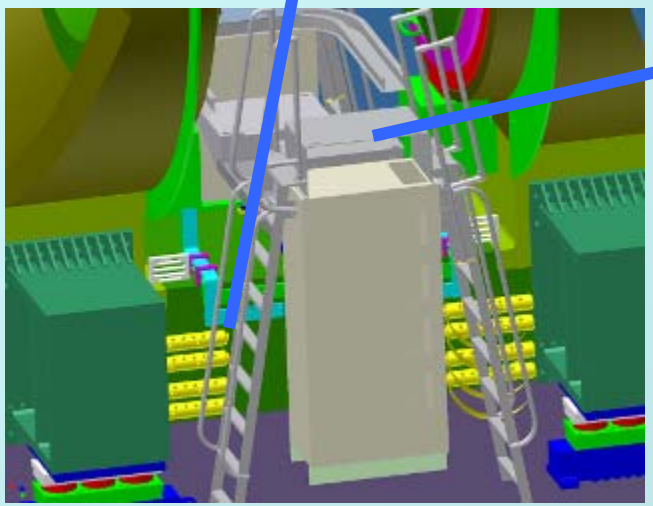

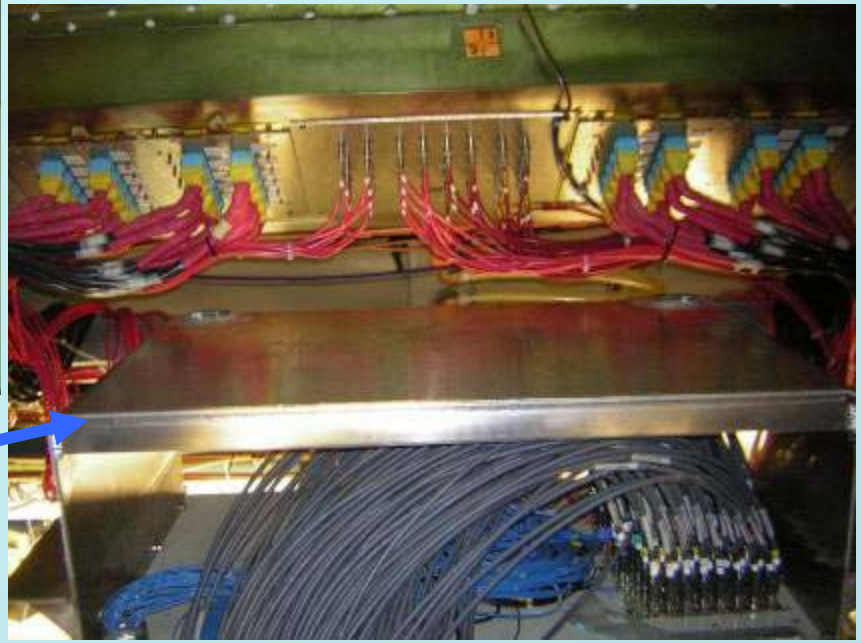

2008 PHENIX Shutdown Prep

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February-March 2008:

- Run 8 technical support
- RPC factory support
- new beam pipe design completion and review
- CM Crane design review and purchase placement
- Muon Trigger FEE prototype test II
- MMN station 1 & 2 scaffolding design and safety review
- Muon Trigger Rack platform design and review
- RPC3 installation review preparation (support structure, transport and installation fixture design, tunnel vapor barrier modification design, gas mixing and distribution system and piping design).
- VTX, FVTX & NCC technical support

RPC Factory Support, cont.

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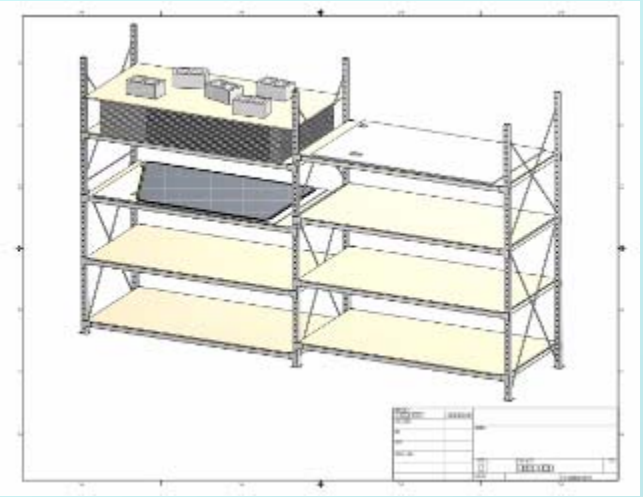
Tent Preparation – Done

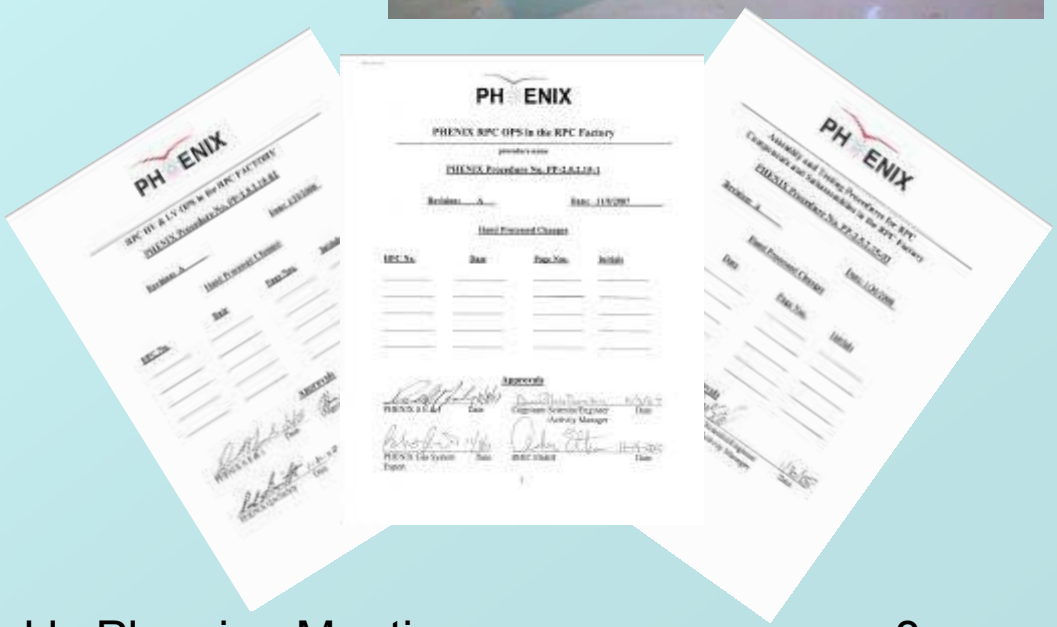
Safety systems – Installation complete, mini-blue sheet

Equipment Issues – Need specs for 3T (Tilting Transport Table) and GMHOS (gap, module and ½ octant storage) racks, then need to fabricate assemble and install.

Work plan – Revised and submitted for approval. Includes 4 new PHENIX/RPC procedures

Security – Comply with C-A policy when necessary





RPC Factory Issues, cont.

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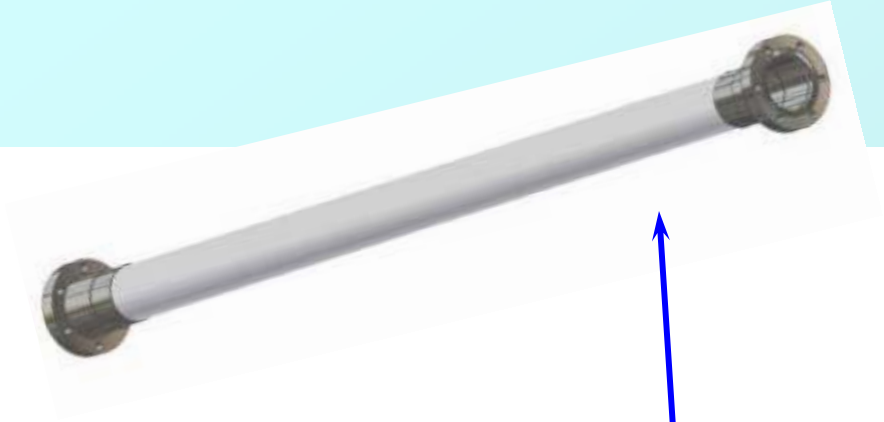
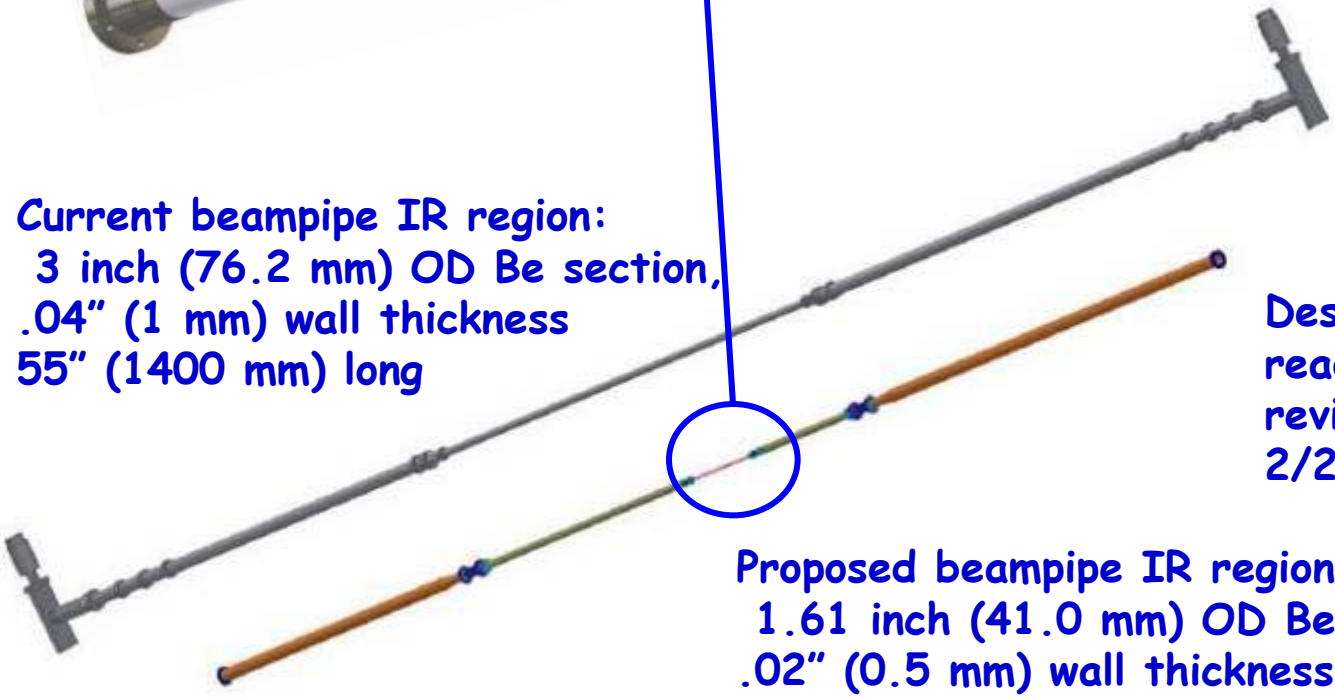
Area to the west of RPC factory is now re-posted and cordoned with yellow tape as a controlled area. A corridor has been left to access the bathroom. Any activities which will need to traverse the posted area (e.g. delivery of materials, equipment etc. through the roll up doors) will require a work permit

New Beampipe Design & Review



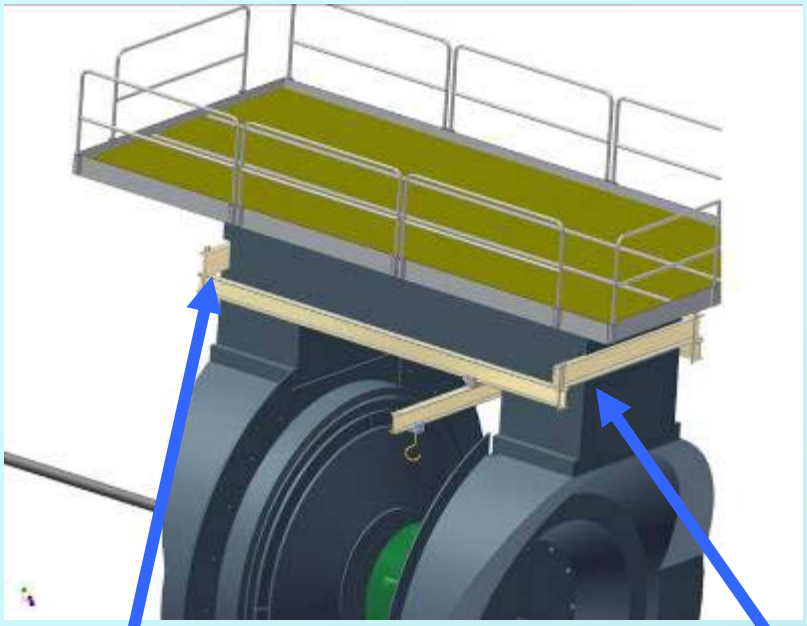
Current beampipe IR region:
3 inch (76.2 mm) OD Be section,
.04" (1 mm) wall thickness
55" (1400 mm) long



Design to be ready for final review by 2/29/08

Proposed beampipe IR region:
1.61 inch (41.0 mm) OD Be section,
.02" (0.5 mm) wall thickness
31.5" (800 mm) long

CM Crane



- Uses Gorbel 1-ton capacity Ceiling mounted Bridge Crane, modified to be supported by 2 Steel Channels attached to CM
- Bridge and hoist to be removed for running.
- Crane Design ready for review

measuring clearances for crane runways

PHENIX Relativistic Heavy Ion Collider (RHIC) PHENIX Experiment
BROOKHAVEN NATIONAL LABORATORY
ENGINEERING CALCULATION

TITLE: Central Magnet Bridge Crane

PREPARED BY: Don Lynch, P.E.
CHECKED BY:

Introduction

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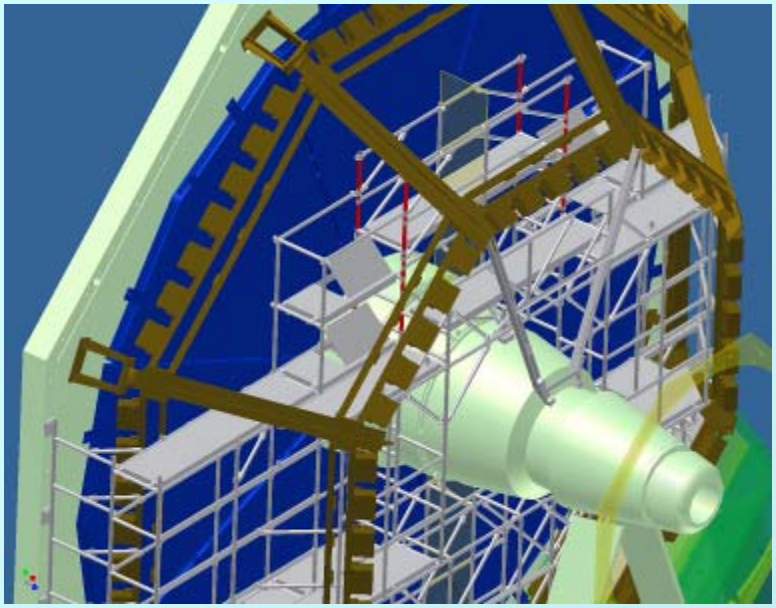
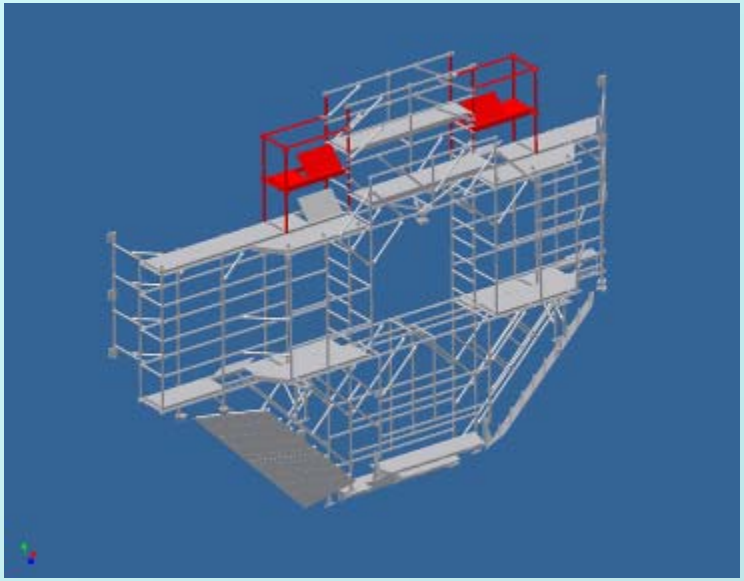
MMN Scaffolding





Existing MMN MuTr scaffolding is being redesigned to be assemble-able with only one lampshade removed and access to all station 2&3 FEE's from lower hatch.

Additional scaffolding to be designed to access all Station 1 North FEE's and lampshade sites adjacent to station 1.

Station 1 North scaffolding to be useable for Station 1 South with minimal modification.

Station 2 & 3 South scaffolding to be addressed later

New ADTX Board Test @ IR

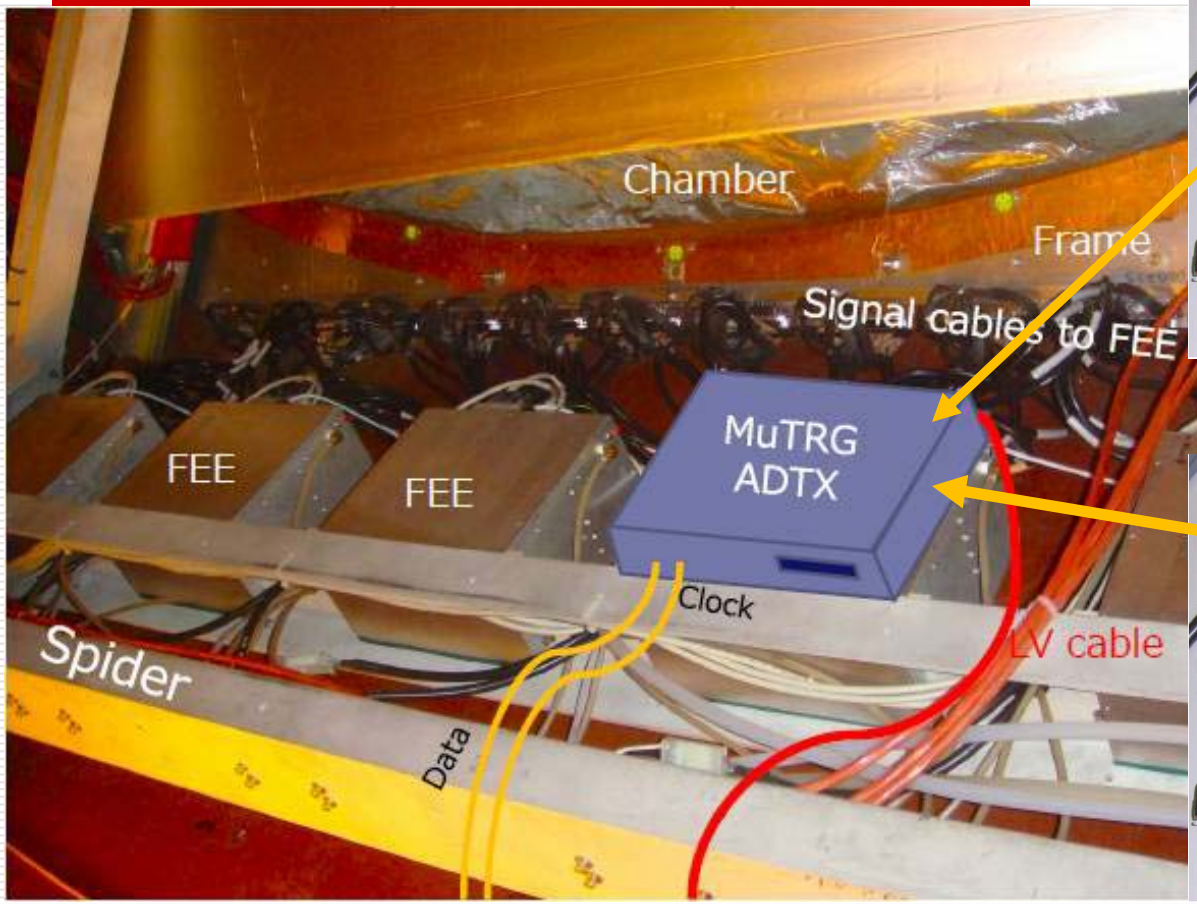
RIKEN/RBRC

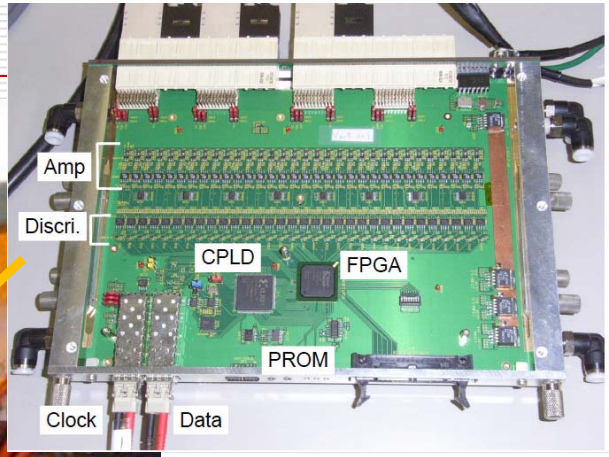
Itaru Nakagawa

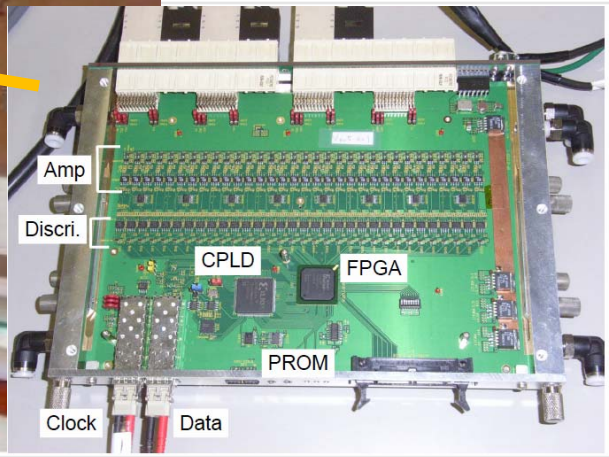
- Measurement of
  - MuTr noise w/ ADTX board
  - Noise at ADTX board
- Test of operation with real beam clock

Scheduled Maintenance Day Feb.27

MuTr North, Station-2, Octant 7(bottom) Same Setup as Summer





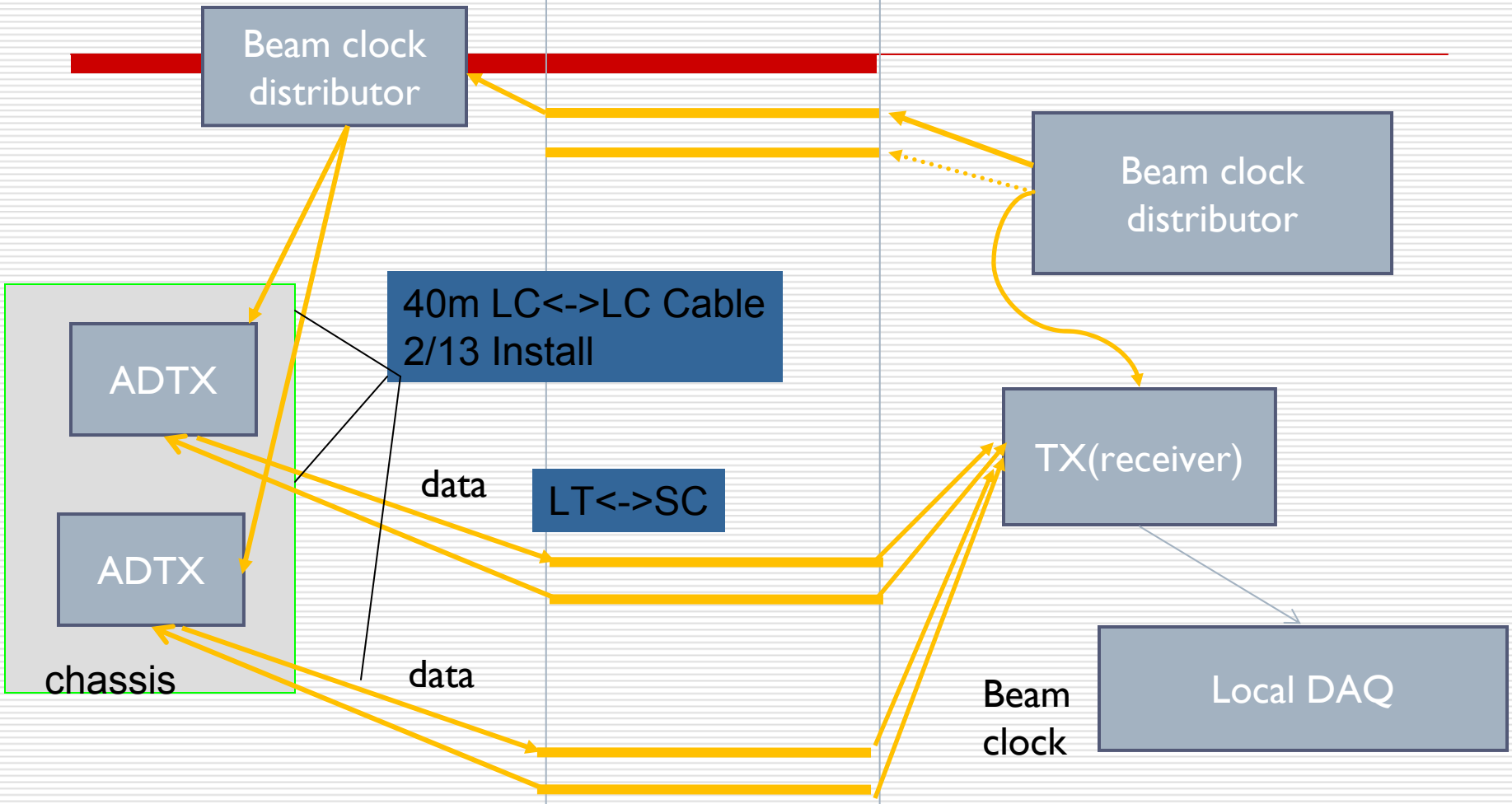


1 Chassis -> 2 ADTX boards

Need Space for Local DAQ

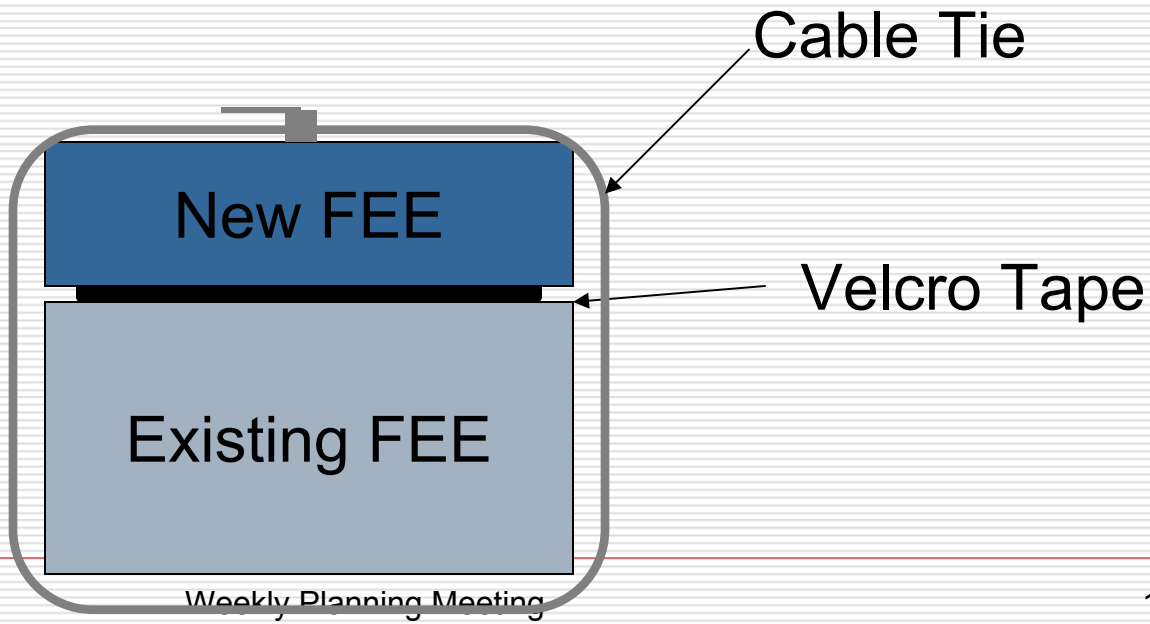
Rack Room / Electronics Preparation Room

Setup Scheme

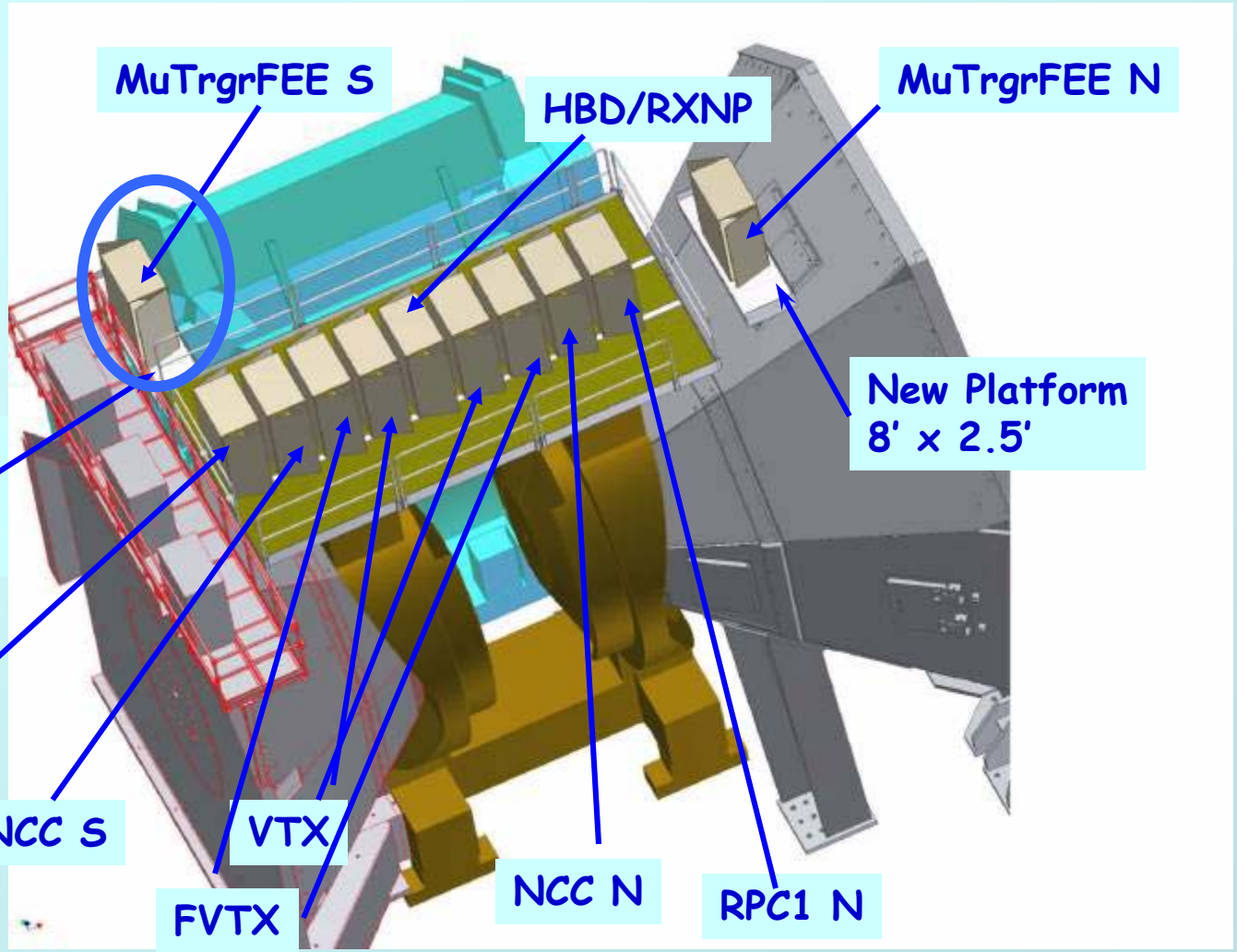


Post 2/27

- Leave ADTX Boards in MuTr.N Volume
  - B-Field Test
  - Real Beam Clock with Beam in RHIC
  - ….



Muon Trigger Rack Platforms



RPC 3 Design Review

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- 2008 shutdown: install one RPC 3 South and one RPC 2 South prototype half octant: requires installation fixtures, prototype gas system, modifications to tunnel vapor barriers, prototype electronics, cable routing support, and, of course, structural support design
- All require both functional and safety reviews (may be combined) by ~June 2008. Assume installation in Aug.-Sept. 2008.
- Cu Absorber installation (1 octant on south)
- Final review for 2008 prototype installation, interim review for overall project.
- MuTrgr FEE electronics, installation, water & air, safety (final for North, interim for south)
- 4 months to prepare

RPC & MuTrgr FEE Project (34 major subtasks)

RPC Factory Setup
RPC Prototype tests (Tent)
RPC Prototype (sta. 3 and sta. 2 south)
MuTrggr Prototype tests
MMN/S Sta. 1 scaffolding design
MMN Sta. 2/3 scaffolding design
MMS Sta 2/3 scaffolding design
3T Transport cart
GMHO Storage
Module Production
RPC3 N production
RPC3 S production
RPC2 N production
RPC2S production
RPC1 N production
RPC1 S production
Cu Absorber
RPC3 N installation
RPC3 installation design
RPC2 N installation design
RPC2S installation design
RPC1 N/S installation design
MuTrigger North
MuTrigger South
MuTrgr Racks
RPC Tunnel Racks
RPC Bridge Racks
MuTrgr Utilities
RPC Gas system
RPC Gas piping
MuTrgr Cables and Routing
RPC Cables and Routing
PHENIX Existing piping/cabling system modification
Tunnel vapor barrier modifications

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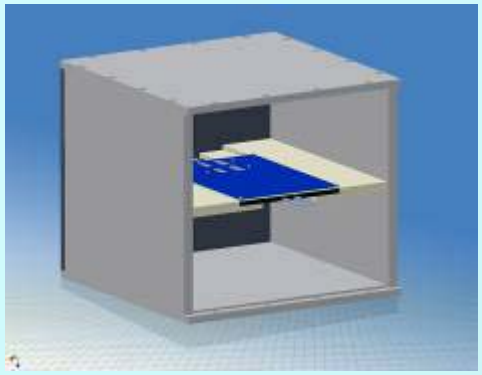
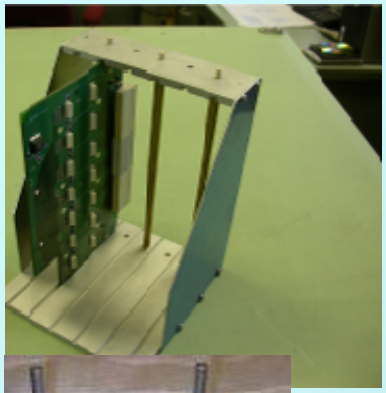
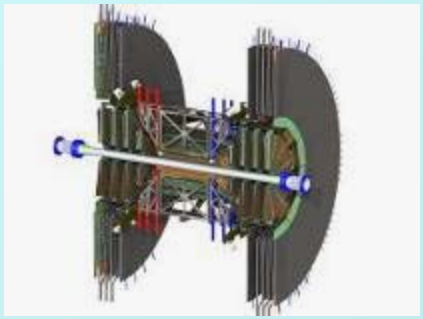
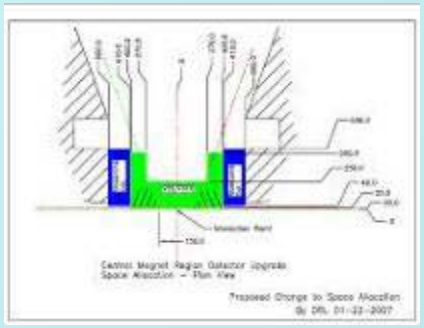
Other Work









- VTX, FVTX and NCC prototype support
  - Integration
  - Physical and Rack space
  - Infrastructure upgrades
- New Counting House Door
- VTX Prototype for run 8 ?

Safety, Security, Etc. :

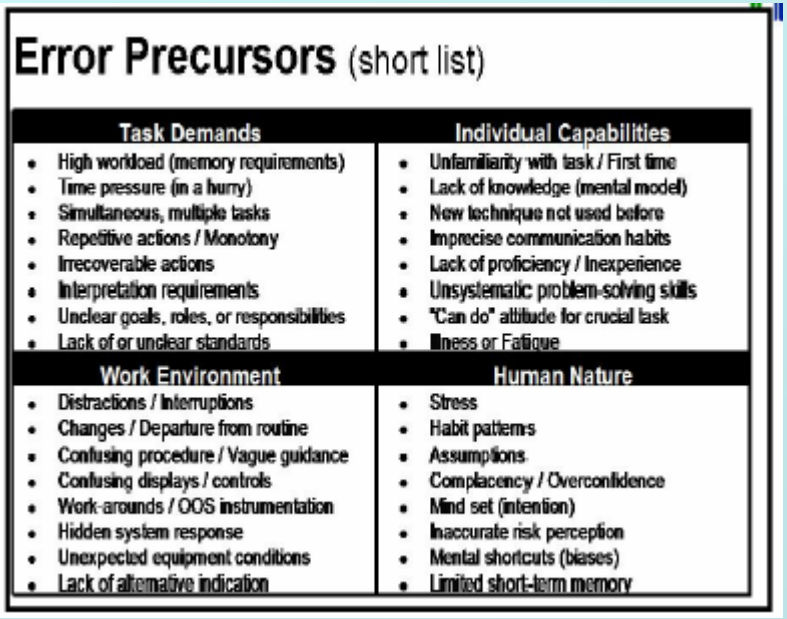
C-AD OPM' s for Human Performance

OPM 2.28.i Conducting Effective Pre-Job Briefings, Walk-Downs and Post-Job Reviews http://www.rhichome.bnl.gov/AGS/Accel/SND/OPM/Ch02/02-28-i.PDF)

OPM 2.28.j Human Performance Tools for C-AD Staff

http://www.rhichome.bnl.gov/AGS/Accel/SND/OPM/Ch02/02-28-j.PDF

Example:



Error Precursors (short list)

Task Demands	Individual Capabilities
• High workload (memory requirements)	• Unfamiliarity with task / First time
• Time pressure (in a hurry)	• Lack of knowledge (mental model)
• Simultaneous, multiple tasks	• New technique not used before
• Repetitive actions / Monotony	• Imprecise communication habits
• Irrecoverable actions	• Lack of proficiency / Inexperience
• Interpretation requirements	• Unsystematic problem-solving skills
• Unclear goals, roles, or responsibilities	• "Can do" attitude for crucial task
• Lack of or unclear standards	• Illness or Fatigue
Work Environment	**Human Nature**
• Distractions / Interruptions	• Stress
• Changes / Departure from routine	• Habit patterns
• Confusing procedure / Vague guidance	• Assumptions
• Confusing displays / controls	• Complacency / Overconfidence
• Work-arounds / OOS instrumentation	• Mind set (intention)
• Hidden system response	• Inaccurate risk perception
• Unexpected equipment conditions	• Mental shortcuts (biases)
• Lack of alternative indication	• Limited short-term memory

2008 PHENIX Shutdown

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Technical Support 2008

March 2008: Complete Run 8, MUTrigger FEE Prototype tests, Purge flammable gas, open shield wall. RPC Factory work. RPC installation design work.

April 2008: Disassemble Shield wall, remove collars, disconnect EC & move to AH, set up IR for shutdown. Test assembly of MMN scaffolding (in AH). Install Station1 South scaffolding. Install CM access stairs. Prep EC for Shutdown requirements.

May 2008: Install CM Crane. MuTr decapacitations in station1 south. Prep work for MuTrgr electronics platforms north & south. Prep work for RPC prototype installation

June 2008: MuTr decaps, station 1 S & N, PC1 repairs, Inst. station2/3 N scaffolding.

July 2008: Re-Install HBD, RPC prototype gas system, Move shielding for RPC installation, RPC prototype cable routing and support, modify crystal palace and tunnel vapor barrier, fabricate RPC installation fixtures, install MMN Station 2 & 3 scaffolding, TBD subsystem maintenance

August 2008: Install RPC prototypes, install Mu Trigger FEE's in MMS and MMN, Install N&S rack support platforms for Mu Trigger FEE's. Install MMN cooling water and air supply for MMN. TBD prototype tests, TBD infrastructure work

September 2008: Replace tunnel shielding, connect electronics, gas, water and air as necessary for RPC and Mu Trigger FEE,

October 2008: Prepare for run, EC into IR, install collars, build shield wall, etc.

November 2007: blue sheets, white sheets, close wall, start shifts, flam. Gas, physics

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5 Year Plan

Technical Support 2008

2008	Install stations 1& 2 of MuTr FEE upgrades (north), 1 octant Cu absorber (S), 2 half otants RPC2/3 S, infrastructure upgrades & repairs, misc. subsystem work, MMN scaffolding, 1 octant of MuTrigger FEE upgrades (south), MuTr N stn. 1,2 & 3 repairs, MuTrigger rack platforms (N&S), CM crane
2009	Scaffolding in MMS, MuTr S stn. 1 & 2 repairs, RPC2 N, RPC3 N, north Cu absorbers, infrastructure upgrades & repairs, misc. subsystem work, remove/replace beampipe, VTX prototype, DC West upgrade/repair
2010	Remove HBD & RXNP, VTX barrel, south Cu absorber completed, MuTr FEE stn. 3 S, MuTr stn. 1, 2 & 3 S repairs, infrastructure upgrades & repairs, misc. subsystem work
2011	RPC1 N&S, NCC S, FVTX, infrastructure upgrades & repairs, misc. subsystem work, remove south absorber
2012	NCC N, upgrades contingency & wishlist, infrastructure upgrades & repairs, misc. subsystem work, remove north absorber

** Years refer to the shutdown year and follow the run with the similar number (i.e. work in 2008 is to be done in the shutdown that follows run 8, and so on)*

Where To Find PHENIX Technical Info

Happy Groundhog Day !

(If he sees his shadow, 6 more weeks of winter. No shadow and spring is around the corner.)

Links for the weekly planning meeting slides, long term planning, pictures, videos and other technical info can be found on the web site:

http://www.phenix.bnl.gov/WWW/INTEGRATION/ME&Integration/DRL_SSint-page.htm